



PUBLIC INTEREST ENERGY RESEARCH ENVIRONMENTALLY-PREFERRED ADVANCED GENERATION (EPAG) PROGRAM AREA

GRANT SOLICITATION AND APPLICATION PACKAGE

PON-08-001

Adaptation of Advanced Mobile Combustion Engine Technologies for Distributed Energy Resources and Combined Heat and Power Applications



Arnold Schwarzenegger, Governor

GRANT SOLICITATION AND APPLICATION PACKAGE

Public Interest Energy Research

Subject Area: Environmentally-Preferred Advanced Generation

Adaptation of Advanced Mobile Combustion Engine Technologies for Distributed Energy Resources and Combined Heat and Power Applications

Release Date: October 6, 2008

Proposal Due Date: January 8, 2009, 4:00 p.m.

Purpose:

This is a competitive grant solicitation sponsored by the California Energy Commission's Public Interest Energy Research (PIER) Program. The intent is to fund research, development, and demonstration (RD&D) projects that will promote the adaptation of advanced equipment and systems developed or being developed for mobile combustion engine applications and apply these technologies to engines used for Distributed Energy Resources (DER) and Combined Heat and Power (CHP), including Combined Cooling, Heating, and Power (CCHP), applications.

The overall objective is to tap into advances made in technologies for engines in the transportation sector and apply them to stationary engines in order to reduce emissions of pollutants and greenhouse gases, increase fuel efficiency, provide advanced control and monitoring, use renewable and/or less carbon intensive alternative fuels, and/or lower cost.

Background:

This solicitation supports existing California legislation and programs. Examples include:

AB 32 (Nuñez, Chapter 488, Statutes of 2006), the California Global Warming Solutions Act of 2006, landmark legislation for reducing greenhouse gas emissions.

AB 118 (Nuñez, Chapter 750, Statutes of 2007), the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007, which may result in new mobile engine technologies that could be applied to stationary engines.

SB 1250 (Perata, Chapter 512, Statutes of 2006), which states, in part:

The general goal of the Public Interest Research, Development, and Demonstration program is to develop, and help bring to market, energy technologies that provide increased environmental benefits, greater system reliability, and lower system costs, and that provide tangible benefits to electric utility customers through ...

- Advanced electricity generation technologies that exceed applicable standards to increase reductions in greenhouse gas emissions from electricity generation, and that benefit electric utility customers.
- Advanced electricity technologies that may reduce or eliminate consumption of ... finite resources.

The Energy Commission is now requesting proposals in order to select projects for possible co-funding. Only those proposals that meet the eligibility requirements and pass the minimum technical score will be considered for funding.

General Problem Statement

Reciprocating engines are the most commonly used prime mover for DER and CCHP applications. The Energy Commission's *2005 Integrated Energy Policy Report (IEPR)* (www.energy.ca.gov/2005_energyypolicy) recognizes CHP as an end use efficiency measure for commercial, industrial and institutional facilities. Since 2003, California's energy policy has defined energy efficiency as first in the Loading Order of resource additions to meet the state's growing electricity demand. Therefore, if considered as an energy efficiency measure, CHP becomes a preferred resource in California's loading order for meeting electricity demand. The *2005 IEPR* identified the potential for "as high as 5,400 MW" of additional CCHP capacity by 2020. Capacity additions of DER systems are falling short of meeting this potential.

There are a number of possible reasons for a shortfall in installed DER capacity, including:

1. California's strict emission standards for criteria pollutants, standards which follow from the need to improve California's air quality.
2. The exclusion of all but fuel cells and wind generators from the Self Generation Incentive Program (SGIP) as of January 1, 2008.
3. The lack of penetration targets, such as those that exist for renewable energy resources (the Renewables Portfolio Standards (RPS)).
4. The high cost of CHP, or perceived lack of cost effectiveness.
5. The limited participation of major engine manufacturers in DER and CHP product sales.
6. The cost and future cost uncertainties of natural gas, the most commonly used fuel for DER applications.

The **General Problem** that this solicitation seeks to address is the slow penetration of reciprocating engines in new DER and CHP installations in California.

Increased penetration of reciprocating engines into stationary markets can occur if the knowledge, experience, technology and marketing power of mobile engine developers and suppliers are applied to stationary markets.

Applicants are expected to narrow the General Problem Statement to a specific problem statement (see Scoring Criterion 1) that is amenable to a research, development and demonstration solution.

Availability of Solicitation Documents and Information:

This solicitation and all supporting documents and forms can be found at www.energy.ca.gov/contracts/index.html under "Current Solicitations." Interested parties may also sign on to the electronic mailing list on this webpage to be notified of any changes to this solicitation.

For those parties without Internet access, copies of solicitation can be obtained by contacting:

Ms. Jennifer Allen
California Energy Commission
Public Interest Energy Research Program
1516 Ninth Street, MS-47
Sacramento, CA 95814
Telephone: (916) 653-0291

In addition, you may request to be added to the mailing notification list to receive changes made to this solicitation.

Funding Information:

The funding available for this solicitation is \$1,000,000 from Natural Gas Funds (Fiscal Year 07/08) and \$1,000,000 from Electricity Funds (Fiscal Year 07/08). The maximum PIER funding to be awarded for any one proposal is \$1,000,000. A minimum of two projects will be selected for funding and will be awarded as grants. Each project will be funded with only one source of funding.

Electricity funds may be used for projects for engines using any fuel, including petroleum-based fuels. For example, diesel engines using petroleum-based diesel, biodiesel, and/or renewable diesel.

Natural Gas funds may be used to fund projects for engines using natural gas and/or alternative fuels. Examples of alternative fuels are ethanol, hydrogen, propane, synthetic fuels (methanol and dimethyl ether), biodiesel, renewable diesel, and X-T-L (biomass-to-liquid, coal-to-liquid, and natural gas-to-liquid).

The Energy Commission (with the agreement of the applicant) reserves the right to determine which funding source to use.

For projects that could qualify for both funding sources, the Energy Commission (with the agreement of the applicant) reserves the right to change the funding source to maximize funding of awards.

All match fund expenditures must occur within the approved term of the agreement. In all cases, the Energy Commission reserves the right to review and approve or disapprove the crediting of contributions and the amounts of those contributions as match funding.

Eligible Projects:

Eligible projects will advance the science, technology, and market penetration in California of combustion engine technologies that exist or are under development.

Proposed RD&D projects suitable for funding under this solicitation must address technical and/or economic barriers in California to the use of engines for DER and CHP systems.

Both the proposal and the project must address each of the following (see Attachment A, Scoring Criteria).

1. The applicability of mobile engine technology to DER and CHP application systems.
2. The extent to which the same engines may be used for both stationary and transportation applications.
3. The potential for market expansion in California into the CHP applications.
4. Transferability of regulatory, warranty, and maintenance support.
5. The feasibility of adapting technology from transportation applications to stationary applications, considering capital cost, operation and maintenance costs, requirements, and performance.
6. The potential benefits to the California utility ratepayers.
7. The ability to address technical and/or economic barriers.

Eligible Applicants:

This is an open solicitation and all types of organizations are eligible to apply. Proposals submitted under this solicitation may request funding only for new projects or new tasks associated with existing projects.

Payment of Prevailing Wage:

Some projects under this solicitation might be considered public works pursuant to the California Labor Code. If the project is a public work, prevailing wage is required. The California Department of Industrial Relations (DIR) has jurisdiction to decide whether a particular project is or is not a public work. If the project involves construction, alteration, demolition, installation, repair or maintenance work, it probably would be considered by DIR to be a public work. A few of the activities that would probably lead DIR to find that the project involves public works include: cement work, site preparation such as grading, surveying, electrical work such as wiring, and carpentry work. Certain workers are entitled to prevailing wage, such as operating engineers, surveyors, carpenters, laborers, etc. However, other trades are not entitled to prevailing wage, such as engineers and project superintendents.

Applicants are encouraged to determine if the proposed project involves public works as soon as possible. In order to determine if the proposed project involves public works, please contact DIR as directed in Attachment F. If the Applicant is unsure whether the proposed project involves public works and has not received a determination from DIR that the project is not a public work, the proposed budget must provide for the payment of prevailing wages. Indicate whether the proposed budget includes prevailing wage.

If the proposed project is a public work, DIR maintains a list of covered trades and the applicable prevailing wage. The grant agreement will include the requirements for a public works project, such as paying prevailing wage, keeping payroll records, complying with working hour requirements, and apprenticeship obligations. See the sample terms and conditions, the Special Condition regarding Prevailing Wage Compliance (Attachment C), and Prevailing Wage Compliance Certification Form (Attachment D).

For detailed information about prevailing wage and the process to determine if the proposed project is a public work, see the Prevailing Wage Compliance Questions and Answers (Attachment E).

California Environmental Quality Act (CEQA):

Some of the projects selected for funding may meet the definition of a “project” for purposes of CEQA (see Public Resources Code section 21000 et seq.). If this occurs, the Energy Commission’s Legal staff will review the projects to determine whether an exemption applies that would prevent further actions under CEQA. If no exemption applies, certain CEQA requirements (e.g., preparation of a negative declaration or environmental impact report) will have to be met prior to the Energy Commission approving the grant. The Applicant will have to pay the cost for these activities. Please refer to Title 20, California Code of Regulations, Chapter 6, Article 1, including section 2308.

Multiple Proposals:

Organizations may submit multiple proposals. However, each proposal must be for a distinct, separate project and must be submitted separately adhering to all requirements contained in this solicitation.

Project Selection and Award Process:

The following process will be utilized to recommend projects for funding:

1. Proposals may be reviewed, on a confidential basis, by technical experts within or outside the Energy Commission.
2. Based on the proposals submitted and the comments of reviewers, a scoring committee will score the projects using the criteria described in Attachment A.
3. During proposal evaluation, the Energy Commission reserves the right to invite Applicants to a clarification interview for their submitted proposals. An applicant, if requested may appear in person at the Energy Commission office or discuss the proposal by telephone. The Energy Commission will provide no reimbursement to any Applicant for the interview appearance.
4. A minimum score of 70% is required for funding. Additional scoring information is in Attachment A.
5. Those projects receiving at least the minimum score will be ranked according to their overall score.
6. Projects obtaining at least the minimum score will be recommended for funding starting with the highest ranked project. The Energy Commission reserves the right to determine the number of projects to be funded.
7. The Energy Commission reserves the right to negotiate with an Applicant to modify the project scope, the level of funding, and source of funds.
8. With approval from the Applicant, the Technical Advisory Committee may modify the application's work statement, schedule, product description, or budget, but may not change the intent of the proposed project.
9. If the Energy Commission is unable to successfully negotiate and execute a funding agreement with an Applicant, the Energy Commission, at its sole discretion, reserves the right to cancel the pending award and fund the next highest ranked eligible proposal received under this solicitation.
10. A Notice of Proposed Awards will be released.

11. Work statements, budgets, special conditions will be finalized with the proposed grant recipient.
 - a. Approved grant recipients will be required to prepare a detailed set of award documents* including, but not limited to, a Work Statement, a list of products and due dates, and detailed budget documents.
 - b. Upon receiving the required documents, a Grant Agreement, which includes applicable Terms and Conditions*, will be written and sent to the grant recipient for review, approval, and signature.
 - c. Once the signed documents are returned to the Energy Commission, the Grant Agreement will be scheduled and heard at an Energy Commission Business Meeting for approval.
12. If approved, the Energy Commission will fully execute the Grant Agreement only after approval at an Energy Commission Business Meeting. Recipients are approved to begin the project only after the date of the full and final execution of the Grant Agreement.

****Samples of the required detailed award documents and the PIER Grant Terms and Conditions can be found at <http://www.energy.ca.gov/contracts/> as part of this solicitation package. Please note, however, the Energy Commission reserves the right to modify these documents and/or Terms and Conditions prior to executing Grant Agreements.***

Schedule of Proposal and Award Process:

<i>Event</i>	<i>Date</i>
Release of Solicitation	October 6, 2008
1 st Deadline for Submitting Questions	October 17, 2008
1 st Posting of Questions & Answers	October 24, 2008
Pre-Bid Conference	November 4, 2008
2 nd Deadline for Submitting Questions	November 19, 2008
2 nd Posting of Questions and Answers	December 3, 2008
Deadline to Submit Proposals	January 8, 2009 4:00 p.m.
Interviews with Applicants (if necessary) (estimated)	February 16 - 20, 2009
Release of Notice of Proposed Awards (estimated)	March, 2009
Approval of Awards at Energy Commission Business Meeting (estimated)	April – May, 2009

Proposal Required Contents:

Proposals should contain the following elements. ***Failure to include these elements WILL result in your proposal receiving a lower overall score, possibly below the passing threshold, and MAY result in the proposal being rejected and not eligible for funding.***

1. Cover Page including Project Title; Solicitation Name; requested PIER funding; entity name; physical address; and contact person's name, title, telephone number, fax number, and email address. On the original, include the signature of the authorized representative of your organization.
2. Abstract/summary of the project (one page, single side, maximum), which includes the title; brief project description; the energy problem being addressed by the project; quantitative, measurable goals to be achieved by the end of the project; the project duration and date of completion; the amount of PIER funding requested; match funding provided; and total project budget.
3. A discussion/explanation of how your project will address each of the scoring criteria described in Attachment A. The PIER Team recommends that your proposal include a section corresponding to each of the Scoring Criteria.
4. Work Statement with a task-by-task description of the proposed project. (The Work Statement is scored under Criterion 3). **Use of the template given in Attachment F is mandatory.** For each task include:
 - (1) A descriptive Task Name
 - (2) A one-sentence goal of the task.
 - (3) A list of the activities to be performed (*specifically what you will do*).
 - (4) Results or products produced.
 - (5) The estimated completion date of the task.
5. The Work Statement shall include a task for *Technology Transfer Activities*. A thorough description can await the final detailed Work Statement if the proposal is recommended for funding. Include a budget for time, travel expenses for meetings and presentations, etc., as appropriate.
6. The Work Statement shall include a task for completion of a *Commercialization Readiness Plan*. In the proposal, describe how the product(s) will reach the marketplace if your project is successful, and the roles of other organizations involved in commercialization, if appropriate. At the end of the project, in the Final Report, Recipients shall update the *Commercialization Readiness Plan* and also estimate Public Benefits resulting from commercialization of the product(s), based on

circumstances at that time, including technical advances made in the project, technical developments made by others outside the project, and market and regulatory conditions. In preparing the task budget, assume that the *Commercialization Readiness Plan* (with Public Benefits analysis) will be approximately 6-12 pages long.

7. A one-page Gantt chart showing the duration and sequencing of the tasks, starting with the date that funding is awarded. Assume a start date of July 1, 2009.
8. Short biographies for the Project Manager/Principal Investigator and key project personnel (individuals in your organization or subcontractors), emphasizing experience related to the activities to be performed in the proposed project. Be specific. Please do not submit complete resumes.
9. Project budget information, including a discussion of the sources and types (cash or in-kind) of match funding, a justification for the share of match funding, and the reasons why this project is not likely to be funded by competitive or regulated markets.

The budget should allow for expenses for Administrative Activities, which include:

- Kick-off Meeting for the Project Manager and Grant Administrator at the Energy Commission in Sacramento, CA.
- Critical Project Review Meetings at least once a year for the Project Manager.
- For budgeting purposes, assume the meetings will be held at the Energy Commission.
- Final Meeting at the Energy Commission for the Project Manager and other key technical staff, as appropriate.
- Monthly Progress Reports (2-4 pages each) during the term of the agreement.
- Final Report Outline, Draft Final Report, and Final Report, approved by the Energy Commission Project Manager, which follows Energy Commission guidelines in effect at the time of the preparation of the Final Report Outline. Guidelines can be accessed at www.energy.ca.gov/contracts/pier/contractors/index.html.
- Verification of match funds and permits required to perform the project. PIER will not reimburse any expenses either for identifying and obtaining match funds or for identifying and obtaining required permits.

In preparing the budget for each technical task, include the cost of a draft and final task technical report, to be approved by the Energy Commission

Project Manager. If a task includes testing of major components or systems, include the cost of a draft and final test plan, to be approved by the Energy Commission Project Manager.

Also, complete and include **Attachment I** which contains three Microsoft Excel spreadsheets: (1) PIER funding for each task, detailed by category; (2) match funding for each task, detailed by category; and (3) summary task budget. This budget form is an Excel workbook that is posted on the Energy Commission website at www.energy.ca.gov/contracts as part of this solicitation package.

10. Complete diagrams of the technology as it would be integrated into a marketable system.

Grounds for Rejection:

Proposals **WILL** be rejected and not considered for funding if the proposal:

1. Is not signed by an authorized representative of the Applicant's organization on the paper original.
2. Is not received by the Energy Commission's Grants and Loans Office by the stated due date and time.
3. Contains any confidential information.
4. Does not use the mandatory Work Statement template.
5. Requests PIER funding of more than \$1,000,000 (one million dollars).

Proposal/Project Guidelines:

Your proposal should adhere to the following guidelines.

1. Provide one (1) original, five (5) copies, and one (1) electronic copy of your proposal. The hard copy documents do not need to be bound; binder clips and staples are acceptable. The original must be clearly marked "ORIGINAL" and must be signed by an authorized representative of your organization. The electronic copy may be submitted on a CDROM or flash drive with documents in MS Word (.doc), MS Excel (.xls), or PDF format.
2. Limit your proposal to a maximum of 30 pages.
3. Use a standard 12-point font and 1 inch or larger page margins. Insert one blank line between paragraphs. Number the pages.
4. Project duration, from kick-off meeting to the acceptance of the final report, cannot exceed four (4) years.
5. All project expenditures (match share and reimbursable by PIER) must be expended within the approved term of the funding agreement.

6. Match funding is expected. Although match funding is not required, the source, type and percentage of match funding will be considered in scoring the proposal with higher percentages being favorably regarded (see the scoring in Attachment A). In general, the closer the project product is to commercialization, the higher the percentage of match share funding that should be contributed to the project.
7. The purchase of equipment (items with a unit cost greater than \$5,000 and a useful life greater than one year) with PIER funds is discouraged due to disposition requirements at the end of the project. Provide justification if PIER funds will be used to purchase equipment. There are no disposition requirements for equipment purchased with match share funding.
8. The budget must reflect estimates for *actual* costs to be incurred during the course of the project. The Energy Commission can approve and reimburse expenditures only for actual costs that are properly documented in accordance with the PIER Grant Terms and Conditions.
9. The budget must **NOT** include any profit from the proposed project, either as a reimbursed item or as match share. In accordance with the PIER Grant Terms and Conditions, **NO PROFIT IS ALLOWED UNDER GRANT AGREEMENTS**. Please review the PIER Grant Terms and Conditions for additional restrictions and requirements.

Confidential Information:

No confidential information will be accepted during the proposal and selection phase of this solicitation. If any confidential information is submitted, the entire proposal will be rejected and will not be eligible for funding. Proposals containing confidential information will be returned to the Applicant. (See Grounds for Rejection.)

Although strongly discouraged, Applicants may *propose* to deliver confidential products during the course of the project. If necessary, instructions on submitting confidential products will be provided by the Energy Commission prior to executing the Grant Agreement.

Submission Requirements:

Proposals must be *received* by the Energy Commission's Grants and Loans Office by 4:00 p.m. (PST) on January 8, 2009. Proposals must be mailed or delivered to:

California Energy Commission
Grants and Loans Office
Attn: Advanced Mobile Combustion Engine Technologies for DER and CHP
1516 Ninth Street, MS-1
Sacramento, CA 95814

Postmark dates of mailing, electronic mail (E-mail), and facsimile (Fax) transmissions are **not** acceptable in whole or in part under any circumstances. The Energy Commission will reject all proposals not received by the Energy Commission's Grants and Loans Office by the stated due date and time. (See Grounds for Rejection.)

Amendment or Cancellation of this Solicitation:

The Energy Commission reserves the right to do any of the following:

1. Cancel this solicitation;
2. Amend or revise this solicitation as needed; or
3. Reject any or all proposals received in response to this solicitation.

Pre-Proposal Conference and Questions:

A Pre-Proposal Conference will be held at the Energy Commission in Sacramento on November 4, 2008.

Questions:

Questions about this solicitation may be submitted in writing via email or letter. Prospective Applicants are especially encouraged to obtain clarification about Grounds for Proposal Rejection, Scoring Criteria, Prevailing Wage, use of the ASERTTI testing and reporting protocols, and Terms and Conditions, either at the Pre-Bid Conference or via submitted questions.

Questions received prior to the Pre-Bid Conference will be answered at the Pre-Bid Conference and will be posted on the Energy Commission's website. All questions and answers will be posted on the Energy Commission website at www.energy.ca.gov/contracts as part of this solicitation package. The person and organization submitting a question will not be identified. There will be two rounds of questions and answers.

	<i>Questions submitted by:</i>	<i>Will be posted with answers on:</i>
<i>Q&A Round 1</i>	October 17, 2008	October 24, 2008
<i>Q&A Round 2</i>	November 19, 2008	December 3, 2008

Questions should be submitted to:

Jennifer Allen
 California Energy Commission
 1516 Ninth Street, MS-47
 Sacramento, CA 95814
 Email: jallen@energy.state.ca.us

Attachments:

- A – Scoring Criteria
- B – ARB 2007 Emission Standards
- C – Prevailing Wage Special Condition
- D – Prevailing Wage Compliance Certificate
- E – Prevailing Wage Compliance Questions and Answers
- F – Work Statement Template
- G – Proposal Cover Page Template
- H – Glossary
- I – Budget Template

Attachment A

Scoring Criteria

Scoring will be based on the criteria described below. Each criterion will be scored on a basis of 0 to 10 points and then multiplied by the corresponding weighting factor. The resulting scores for the applicable criteria will be summed and then divided by the sum of the maximum possible points to obtain a percentage. A minimum score of 70% will be required to be eligible for funding.

<i>Score</i>	<i>Response to the Criterion</i>
0	Not responsive
1 – 2	Response is minimal
3 – 4	Responds only marginally to relevant considerations
5 – 6	Responds satisfactorily to most relevant considerations
7 – 8	Responds satisfactorily to all relevant considerations
9	Responds completely, accurately, and convincingly to all relevant considerations
10	Response is complete, specific and superior, both quantitatively and qualitatively

1. The Current Status of the Subject Technology and a Problem Statement

Criterion Scoring Range: 0 - 10

Weighting Factor: 1.5

Maximum Possible Points: 15

- The cost, performance and market characteristics of the baseline technology to be improved or adapted are completely, clearly and quantitatively described.
- The proposal clearly shows that the technology or equipment proposed for further development is being developed or is already developed for mobile engine applications.
- The most significant barriers, knowledge gaps, and technical deficiencies that impede market penetration in California are identified and described. The descriptions demonstrate that the Applicant has a thorough understanding of the science, engineering, and manufacturing associated with the proposed project.
- The specific issue(s) or barrier(s) that the project will address is clearly and completely described.
- Past and current work in the subject technology performed by the project team, including successes and failures, are described.
- The Project's Problem Statement is consistent with the General Problem Statement for this solicitation.
- The problem requires an RD&D solution.

- Evidence – including specifications, data, and calculations – that the system has, or will have by a specified date, emissions that satisfy the ARB 2007 emissions standards for Distributed Generation systems (see Attachment B). Alternatively, describe why the system is exempt from these standards.

2. Cost and Technical Performance Goals

Criterion Scoring Range: 0 - 10
Weighting Factor: 1.5
Maximum Possible Points: 15

- The current cost and performance of the system to be improved are completely described and supported by calculations, experimental data and literature references.
- The methodology to determine if the cost goals have been achieved is described.
- The methodology to determine if the technical performance goals have been achieved is described.
- The impacts of the proposed project on technical barriers that are hindering the use of engines in California are described and quantified.
- The system cost and performance improvement goals to be achieved at the end of the project are given in either absolute or percentage terms.

3. Technical Description and Approach of the Proposed RD&D

Criterion Scoring Range: 0 - 10
Weighting Factor: 3.0
Maximum Possible Points: 30

- The proposal describes how the project will advance the science, technology, and market penetration in California in one or more of the following.
 - Advancing technologies that enable engine systems that reduce greenhouse gas emissions.
 - Achieving criteria pollutant emissions lower than the ARB 2007 emissions standards for DER and DER/CHP systems (See Attachment B. Emission information can be found at www.arb.ca.gov/energy/dg/dg.htm).
 - Developing low-cost, reliable, robust emissions sensors, monitoring components and systems, and/or control systems to maintain low emissions and/or efficient electrical and thermal operations.
 - Increasing fuel use efficiency, system electrical and thermal utilization efficiency, and load following capability with improved control systems.

- Increasing efficiency, reducing costs, and increasing reliability, availability, maintainability, and durability (RAMD) of stationary engine systems.
- Reducing capital costs, installation costs, and operation and maintenance costs of engine prime movers for CHP systems.
- Recovering otherwise wasted energy to increase the cost-effectiveness of generating electricity.
- Adapting engine systems in stationary applications to use renewable fuels, alternative fuels with lower carbon intensity, otherwise wasted fuels, or flare gases as fuels. (Note: the advancements proposed must be in engine systems, not in fuel processing, conditioning, or production. These may be included in the project but must not be funded with PIER funds and the cost of these activities will not be considered as match funds in scoring the proposal. Biofuels development if funded under the PIER Renewables area and alternative fuel development will be funded under a separate program established by AB 118, Statutes of 2007.)
- The Technical Approach describes how the proposed work will address barriers to advance the state-of-the-art and market acceptance in California of engines for DER and CHP applications.
- The Technical Approach describes how the proposed project will incorporate transportation engine technology for this project and in an eventual commercial product.

4. Work Statement

Criterion Scoring Range: 0 - 10

Weighting Factor: 1.0

Maximum Possible Points: 10

- The Work Statement follows the required template both in content and in responsiveness.
- The Applicant shows that it is cognizant of the differences among the Task Title, Goal, Objective, and Activities.
- Technical tasks describe specifically what the project team will do during the term of the project.
- The technical tasks are clearly and logically presented, with descriptive titles, appropriate and quantitative task goals, sequence of activities, and products.
- Appropriate Test Plans, that will demonstrate project cost and performance goals have been achieved, are included in the tasks.
- The Gantt Chart presents a reasonable schedule for the tasks.
- The project does not exceed 4 years in duration.

5. California Ratepayer Benefits and Need for PIER Funding

Criterion Scoring Range: 0 - 10

Weighting Factor: 1.5

Maximum Possible Points: 15

- The proposal includes a detailed explanation of why the proposed project has not been addressed and will not be addressed by competitive or regulated markets.
- The proposal makes a compelling case that the project (not just the Applicant or a Team Member) requires PIER funding and at the amount requested, rather than being funded internally or by competitive or regulated markets.
- Other sources of funding, especially from team members, are identified.
- The proposal describes how the technology, hardware or system to be developed will satisfy customer needs in ways that cannot be satisfied by currently available technologies, hardware or systems.
- Public benefits to California utility ratepayers – residential, academic, commercial, institutional and/or industrial – of a commercial product are described and quantified. Public benefits include improved fuel use efficiency, lower costs for electricity, reduced demand for petroleum based fuels, lower greenhouse gas emissions, reduced emissions of criteria pollutants, more secure and reliable electricity supply, and reduced peak demand for electricity.
- Private benefits of a commercial product are described and quantified.
- The quantification of benefits is plausible, both in terms of the type and the amount, based on the ability of the project team to bring technologies to, and penetrate, the market.
- The proposal shows that the anticipated benefits are consistent with the cost, technological and market goals and the commercialization path.

6. Qualifications of Project Manager and Project Team

Criterion Scoring Range: 0 - 10

Weighting Factor: 1.0

Maximum Possible Points: 10

- The description demonstrates that the project team is qualified to undertake the proposed project.
- The Project Manager and team members have the technical capabilities and specific experience, including capabilities and experience with transportation engine technology, to successfully complete the project.
- The relevant experience and specific roles of the Project Manager and key team members are described.

- Past experience in projects resulted in products that were commercialized, or are on a clear path to commercialization (1) in California and (2) elsewhere.
- The Project Manager can successfully manage the project, control cost, maintain the schedule, and report results and accomplishments in an effective manner.
- The project team has the financial, management and technical resources to advance the technology to the next stage of development and/or commercialization.

7. Market Performance Goals and Commercialization Path

Criterion Scoring Range: 0 - 10
Weighting Factor: 1.5
Maximum Possible Points: 15

- The system cost and performance improvement goals that need to be achieved for market introduction are given in absolute terms.
- The proposal explains why the technology improvements will make a difference in customer acceptance of engines for stationary applications.
- The impacts of the proposed project on market barriers that are hindering the use of stationary engines in California are described and quantified.
- The place of the proposed project in the Commercialization Path – starting with the current status of the technology, continuing through the proposed project, and concluding with additional technology advancement, manufacturing, and market development – is outlined.
- A reasonable path for commercialization of the technology is described.
- Market penetration goals or estimates are reasonable based on technical potential, economic and regulatory conditions, and the commercialization partner's existing or expected market share.

8. Project Budget and Cost Effectiveness

Criterion Scoring Range: 0 - 10
Weighting Factor: 3.0
Maximum Possible Points: 30

- The total project budget is consistent with the work to be performed and the level of expertise required.
- The PIER funding requested is appropriate and consistent with the expected level of public benefit.
- The public and private benefits of the project are identified.
- The match funding provided is consistent with the expected level of private benefits.

- The percentage of match funding is appropriate, with higher percentages provided for projects with products close to commercialization.
- The sources of match funding are described and identified as in-kind or cash.
- Each team member has committed match funds to the project.
- The project team has sufficient financial resources to complete the project and meet unexpected delays or lapses in funding.
- Project funds are spent in California.

9. Other Significant Factors That Increase the Project's Merit

Criterion Scoring Range: 0 - 10

Weighting Factor: 0.5

Maximum Possible Points: 5

The proposal must explicitly identify factors that are to be considered by the Scoring Team. These factors must be **beyond** those considered under other Scoring Criteria and beyond those identified in the General Problem Statement for this solicitation.

The following are *examples* of other significant factors that will be considered by the proposal evaluation team:

- The proposal shows that the project supports California energy policies and policy report recommendations, or may provide a basis for informing future energy policy.
- The project contributes to a balanced PIER portfolio across technology types, levels of risk, and/or time to commercialization. (Applicants should check the PIER Annual Report for descriptions of previous and prior PIER funded projects to assess possible duplication.)
- The proposal shows the project addresses AB 32, the Global Warming Solutions Act of 2006 (Division 25.5 (commencing with Section 38500) of the Health and Safety code), requiring California to reduce statewide greenhouse gas emissions to 1990 levels by 2020.
- The project may develop and deploy innovative and pioneering technologies that will assist California in achieving the 2020 statewide limit on emissions of greenhouse gases, as explained in AB32.

Attachment B**California Air Resources Board January 1, 2007,
Fossil Fuel Emission Standards for Certification of Distributed
Generation/ Combined Heat and Power (DG/CHP) Systems**

<i>Pollutant</i>	<i>Emission Standard (lb/MWh) *</i>
Oxides of Nitrogen (NOx)	0.07
Carbon Monoxide (CO)	0.10
Volatile Organic Compounds (VOCs)	0.02
Particulate Matter (PM)	An emission limit corresponding to natural gas with fuel sulfur content of no more than 1 grain/100 scf

* DG units that use CHP may take a credit to meet the emission standard above. Credit shall be at the rate of one megawatt-hour (MW-hr) for each 3.4 million British Thermal Units (BTUs) of heat recovered. To take the credit, both of the following must apply:

- (A) DG units are sold with CHP technology integrated into a standardized package by the Applicant; and
- (B) CHP units achieve a minimum efficiency of 60 percent (useful energy out/higher heating value [HHV] fuel energy in) in the conversion of the energy in the fossil fuel to electricity and process heat. The efficiency determination shall be based on 100 percent load.

These standards have also been proposed by South Coast Air Quality Management District (SCAQMD) for permitting of all DG systems with a prime mover of less than 1,000 horsepower. Continuous emissions monitoring of these systems is also being proposed.

**Waste Gas (Digester, Landfill, or Oil-field Waste Gas)
Emission Standards**

Pollutant	Emission Standard (lb/MWh)	
	January 1, 2008	January 1, 2013
NOx	0.5	0.07
CO	6.0	0.10
VOCx	1.0	0.02
PM	-	-

DG Units that produce combined heat and power may take a credit to meet the January 1, 2013, emission standard above. Credit shall be at the rate of one MW-hr for each 3.4 million Btu's of heat recovered. To take the credit, the following must apply:

- (1) DG Units are sold with combined heat and power technology integrated into a standardized package by the Applicant; and
- (2) DG Units achieve a minimum energy efficiency of 60 percent.

Additional information can be found at <http://www.arb.ca.gov/energy/dg/dg.htm>.

Attachment C

Prevailing Wage Special Condition

PUBLIC WORKS AND PAYMENT OF PREVAILING WAGE

A. Recipient/General Requirements

1. Recipient shall comply with state prevailing wage law, Chapter 1 of Part 7 of Division 2 of the Labor Code, commencing with Section 1720 and Title 8, California Code of Regulations, Chapter 8, Subchapter 3, commencing with Section 16000, for any “public works” (as that term is defined in the statutes) performed on the Project funded by this Agreement. For purpose of compliance with prevailing wage law, the Recipient shall comply with provisions applicable to an awarding body. Compliance with state prevailing wage law includes without limitation: payment of at least prevailing wage as applicable; overtime and working hour requirements; apprenticeship obligations; payroll recordkeeping requirements; and other obligations as required by law.
2. Recipient shall certify to the Energy Commission on each Payment Request Form, that prevailing wages were paid to eligible workers who provided labor for work covered by the payment request and that the Recipient and all contractors complied with prevailing wage laws. Prior to the release of any retained funds under this Agreement, the Recipient shall submit to the Energy Commission a certificate signed by the Recipient and all contractors performing public works activities stating that prevailing wages were paid as required by law.

B. Flowdown Requirements

Recipient shall ensure that all agreements with its contractors to perform work related to this project contain the following provisions:

1. Contractor shall comply with state prevailing wage law, Chapter 1 of Part 7 of Division 2 of the Labor Code, commencing with Section 1720; and Title 8, California Code of Regulations, Chapter 8, Subchapter 3, commencing with Section 16000, for all construction, alteration, demolition, installation, repair or maintenance work over \$1,000 performed under the contract. Contractor’s obligations under prevailing wage laws include without limitation: pay at least the applicable prevailing wage for public works activities performed on the Project; comply with overtime and working hour requirements; comply with apprenticeship obligations; comply with payroll recordkeeping requirements; and comply with other obligations as required by law.

2. Contractor shall ensure that the above requirements are included in all of its contracts and any layer of subcontracts for activities for the Project.

Attachment D**Prevailing Wage Compliance Certificate**

After the public works¹ activities funded by this Agreement are complete, Recipient must fill out and sign this certificate and obtain the signatures from all of its contractors and any layer of subcontractors involved in public works funded by this Agreement.

This certificate must be completed and submitted to the Energy Commission Project Manager prior to the release of the retained funds under this Agreement.

Recipient: _____

Energy Commission Agreement Number: _____

Date public works completed: _____

Recipient hereby certifies as follows:

1. State prevailing wage law, Chapter 1 of Part 7 of Division 2 of the Labor Code, commencing with Section 1720 and Title 8, California Code of Regulations, Chapter 8, Subchapter 3, commencing with Section 16000, has been complied with for the “public works” (as that term is defined in the statutes) funded by this Agreement, including payment of at least prevailing wage as applicable; overtime and working hour requirements; apprenticeship obligations; payroll recordkeeping requirements; and other obligations as required by law.
2. All contracts and every layer of subcontracts involving public works funded by the above-referenced Agreement contained requirements that the contractor or subcontractor comply with prevailing wage law and pay prevailing wages in accordance with the requirements of the Labor Code.
3. The contractors and subcontractors have maintained labor records as required by the Labor Code and such records shall be made available upon request.

¹ Public works is defined in Chapter 1 of Part 7 of Division 2 of the Labor Code, commencing with Section 1720.

4. The undersigned Recipient acknowledges that disbursement of the retention by the California Energy Commission is expressly made in reliance upon the representations made in this certification.

Recipient Company Name: _____

Signature of Authorized Representative: _____

Printed/Typed Name: _____

Title: _____

Date: _____

Each contractor and subcontractor performing public works (e.g., construction, alteration, demolition, installation, repair or maintenance work) for the Project must sign below. Include additional pages if necessary.

Contractors and subcontractors hereby certify as follows:

1. The contract with the Recipient or the Recipient's contractor to perform work funded by the above-referenced Agreement contained requirements that the contractor and all its subcontractors comply with prevailing wage law and pay prevailing wages in accordance with the requirements of the Labor Code.
2. Prevailing wages have been paid as required by law.
3. Contractor and all its subcontractors have maintained labor records as required by the Labor Code and such records shall be made available upon request.
4. The undersigned acknowledges that disbursement of the retention by the California Energy Commission to the Recipient is expressly made in reliance upon the representations made in this certification.

Name of Construction Contractor #1: _____

Signature of Authorized Representative: _____

Printed/Typed Name: _____

Title: _____

Date: _____

Name of Construction Contractor #2: _____

Signature of Authorized Representative: _____

Printed/Typed Name: _____

Title: _____

Date: _____

Name of Construction Contractor #3: _____

Signature of Authorized Representative: _____

Printed/Typed Name: _____

Title: _____

Date: _____

Name of Construction Contractor #4: _____

Signature of Authorized Representative: _____

Printed/Typed Name: _____

Title: _____

Date: _____

Name of Construction Contractor #5: _____

Signature of Authorized Representative: _____

Printed/Typed Name: _____

Title: _____

Date: _____

Attachment E

Prevailing Wage Compliance Questions and Answers

1. Is Payment of Prevailing Wage Required?

Yes. Any Recipient whose project involves “public works” as the term is defined in Chapter 1 of Part 7 of Division 2 of the Labor Code, commencing with Section 1720, must pay prevailing wages in accordance with the law.

2. Does prevailing wage apply to private entities?

Yes. A private entity must pay prevailing wage under California law if the project involves public works.

3. How do I know if my project involves public works?

The California Labor Code beginning at section 1720 deals with this issue. Labor Code sections 1720 and 1771 define public works as:

- Construction (includes work performed during the design and preconstruction phases of construction including but not limited to, inspection and land surveying work) or
- Alteration or
- Demolition or
- Installation or
- Repair work or
- Maintenance work

These Labor Code sections can be found online at <http://www.leginfo.ca.gov/calaw.html>

Below are some examples (this list is not exhaustive) of the types of activities that typically lead to finding that a project is a public work:

- cement work such as pouring a cement pad
- site preparation such as grading
- surveying
- electrical work such as wiring
- carpentry work
- limited inspection activities
- What kind of trades or workers must be paid prevailing wage?

4. What kind of trades or workers must be paid prevailing wages?

The California Department of Industrial Relations (DIR) Division of Labor Statistics and Research (DLSR) makes the final determination on which trades and/or workers are covered by prevailing wage laws. DLSR maintains a list of the covered trades/workers that are entitled to prevailing wage for public works commercial construction projects. See www.dir.ca.gov/dlsr/statistics_research.html or call the DLSR Prevailing Wage Hotline (415) 703-4774 for more information about these trades.

Generally, workers such as the following would be covered trades:

- Operating engineer (heavy equipment operator)
- Surveyor
- Carpenter
- Cement Mason
- Electrician
- Laborer

The following types of workers usually would NOT be covered trades entitled to prevailing wage:

- Engineer
- Project superintendent / construction manager / project manager
- Architect
- Planner
- Computer programmer

The above examples are for general information only. If you have questions about whether a worker is in a covered trade requiring payment of prevailing wages, you should check directly with DIR.

5. What if I am unsure whether my project involves public works and prevailing wage must be paid? How Should I Budget if I am Unsure About Prevailing Wage?

You are encouraged to determine if your project involves public works as soon as possible. In order to determine if your project is a public work, you will need to contact the DIR. They can be reached at (415) 703-4774. If you do not know whether your project is a public work and you have not obtained a determination from DIR that the project is not a public work, you must budget with the assumption that the project is a public work and comply with the prevailing wage laws, including, but not limited to, the payment of prevailing wages.

On the budget, please indicate whether your budget includes amounts for the payment of prevailing wage. You must indicate “yes” unless you have received a determination from DIR that the project is not a public work.

If you do not budget for prevailing wage, and it is later determined that the project involves public works and prevailing wage must be paid, you may be liable for damages and penalties. You also cannot later increase your grant award if it is determined that prevailing wages apply and increase project costs higher than budgeted. The amount requested in your proposal is the maximum that will be paid. Any increased costs for payment of prevailing wage must be paid with match funds. The Energy Commission's grant award amount does not change or increase if the applicant's costs increase for any reason.

6. How do I get assistance in determining whether the project involves public works?

First, call the DLSR Prevailing Wage Hotline at (415) 703-4774. The Prevailing Wage Hotline can frequently give advice quickly on routine questions. If the Prevailing Wage Hotline is unable to answer your question, you will need to write to the Director of DIR for a coverage determination on whether your project involves public works. You would include all the relevant facts and documents related to the project. DIR regulations, Title 8 California Code of Regulations, section 16001(a)(1), provides that any interested party may file a request with the Director of DIR to determine coverage under the prevailing wage laws. The request can be either for a specific project or type of work to be performed that the interested party believes may be subject to or excluded from coverage as public works under the Labor Code. The full text of DIR's regulations can be found at: <http://ccr.oal.ca.gov>, (Title 8, Division 1, Chapter 8, Subchapter 3, Article 2). Send requests for a coverage determination to:

Department of Industrial Relations
Office of the Director
455 Golden Gate Avenue
San Francisco CA 94102
How long will it take to get an answer?

7. How long will it take to get an answer?

We do not know, but hope that the question can be asked and answered informally and quickly through the Prevailing Wage Hotline. If you need to submit a request to the Director of DIR, it will take longer to get a coverage determination.

- 8. What happens if I make a request to DIR but do not have a decision, or am still unsure whether prevailing wage must be paid, by the time the Energy Commission makes an award at a business meeting, or by the time I execute the grant agreement?**

In this case, the Energy Commission would execute a grant agreement with a budget that assumes prevailing wage is required. If the Recipient, prior to performing the activities in question, then receives a determination from DIR that the project is not a public work, then the Energy Commission can execute an amendment with the Recipient to decrease the budget accordingly. The prevailing wage terms and conditions can also be removed.

- 9. What if I submit a proposal to the Energy Commission with a project that I say is not a public work, and the Energy Commission believes that it might be a public work? How would we resolve our differences?**

We would request that you first call the Prevailing Wage Hotline. If you do not receive an answer, we would request that you write a letter to DIR and ask DIR to make the decision. If DIR says the project is a public work, then you will need to pay prevailing wages. If you do not obtain a DIR determination that the project is not a public work requiring the payment of prevailing wage, then you must assume that the project is a public work and comply with the prevailing wage laws, including paying prevailing wages.

- 10. If my project is a public work, how do I know what prevailing wages are required in order to prepare a budget?**

If your project is a public work, please submit your budget with the applicable prevailing wage for each trade entitled to prevailing wage as determined by DLSR. For prevailing wage rate information for commercial projects, see www.dir.ca.gov/dlsr/statistics_research.html or call the Prevailing Wage Hotline at (415) 703-4774. If your project involves residential construction, the rates are not listed on DIR's website, and you must call the DLSR Prevailing Wage Hotline.

- 11. What do I do if workers will be used who do not fit neatly into one of the categories on the DIR website?**

Contact DLSR and describe the type of trade you anticipate will be required in your project and ask whether there is an existing prevailing wage already set by DLSR.

12. Does prevailing wage apply to a public entity that performs project work with its own employees?

No.

13. If my project is considered a public work, then are there any special requirements?

Yes. For example, the grantee must make sure that covered workers are paid prevailing wage. There are other requirements, such as keeping payroll records, complying with working hour requirements, and apprenticeship obligations. See the Labor Code and the sample terms and conditions, Special Condition regarding Prevailing Wage.

Attachment F

Work Statement Template

Applicants should refer to the Work Statement Template which is posted at www.energy.ca.gov/contracts as part of this solicitation package. The document is a Microsoft Word document. Applicants should use the Attachment F template when completing the proposed work statement for submittal to the Energy Commission under this solicitation.

Attachment G**Proposal Cover Page**

Applicants should refer to the Proposal Cover Page Template which is posted at www.energy.ca.gov/contracts as part of this solicitation package. The document is a Microsoft Word document. Applicants should use the Attachment G template when completing the proposal cover page for submittal to the Energy Commission under this solicitation.

Attachment H

Glossary

Specific terms and acronyms used throughout this PON and Solicitation are defined as follows:

Acronym	Definition
ASERTTI	Association of State Energy Research and Technology Transfer Institutions
ARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CCHP	Combined Cooling, Heating, and Power
CHP	Combined Heat and Power
CPM	Commission Project Manager
CO	Carbon Monoxide
CPR	Critical Project Review
DER	Distributed Energy Resources
DG	Distributed Generation
DIR	California Department of Industrial Relations
DLSR	Division of Labor Statistics and Research
DVBE	Disabled Veteran Business Enterprise
HHV	Higher Heating Value
IEPR	Integrated Energy Policy Report
MW	Megawatts
MWh	Megawatt Hours

NOx	Nitrogen Oxides
O&M	Operation and Maintenance
PIER	Public Interest Energy Research
PM	Particulate Matter
PST	Pacific Standard Time
RAMD	Reliability, Availability, Maintainability, and Durability
RD&D	Research, Development, and Demonstration
RPS	Renewable Portfolio Standards
SCAQMD	South Coast Air Quality Management District
SGIP	Self Generation Incentive Program
TAC	Technical Advisory Committee
ULN	Ultra Low NOx
VOCs	Volatile Organic Compounds

Attachment I

Budget

Applicants should refer to the Budget Template which is posted at www.energy.ca.gov/contracts as part of this solicitation package. The document is a Microsoft Excel document. Applicants should use the Attachment I template when completing the budget for submittal to the Energy Commission under this solicitation.